

What is claimed is:

1. A method for processing dual tone multi-frequency signals for use with a natural language understanding system, said method comprising:

(a) determining whether an audio input signal is a dual tone multi-frequency signal or a human speech signal;

(b) if said audio input signal is determined to be said dual tone multi-frequency signal, converting said audio input signal to a text equivalent; and

(c) providing said text equivalent to a natural language understanding system, said natural language understanding system determining a meaning from said text equivalent.

2. The method of claim 1, further comprising:

(d) determining one or more prosodic characteristics of said received dual tone multi-frequency signal.

3. The method of claim 2, wherein said determined prosodic characteristics are used in said step (b) to determine said text equivalent.

4. The method of claim 1, further comprising:

(e) if said audio input signal is determined to be a human speech signal, providing said audio input signal to a speech recognition system for converting speech to text.

1 5. The method of claim 4, further comprising:

2 (f) collating text received from said speech recognition system with at least  
3 one said text equivalent.

1 6. The method of claim 5, wherein said step (c) comprises providing said collated  
2 text comprising text received from said speech recognition system and at least one said  
3 text equivalent to a natural language understanding system.

1 7. The method of claim 1, wherein said natural language understanding system  
2 provides contextual feedback to said step (b) for converting said audio input signal  
3 identified as a dual tone multi-frequency signal to said text equivalent.

1 8. A method for processing dual tone multi-frequency signals for use with a natural  
2 language understanding system, said method comprising:

3 (a) receiving a dual tone multi-frequency signal;  
4 (b) converting said dual tone-multi frequency signal to a text equivalent; and  
5 (c) providing said text equivalent to a natural language understanding system,  
6 said natural language understanding system determining a meaning from said text  
7 equivalent.

1 9. The method of claim 8, further comprising:

2 determining one or more prosodic characteristics of said received dual tone  
3 multi-frequency signal.

1 10. The method of claim 9, wherein said determined prosodic characteristics are  
2 used in said step (b) to convert said received dual tone multi-frequency signal to said  
3 text equivalent.

1 11. The method of claim 8, wherein said step (c) provides contextual feedback to  
2 said step (b) for converting said received dual tone multi-frequency signal to said text  
3 equivalent.

1 12. A machine readable storage, having stored thereon a computer program having  
2 a plurality of code sections executable by a machine for causing the machine to  
3 perform the steps of:

4 (a) determining whether an audio input signal is a dual tone multi-frequency  
5 signal or a human speech signal;

6 (b) if said audio input signal is determined to be said dual tone multi-  
7 frequency signal, converting said audio input signal to a text equivalent; and

8 (c) providing said text equivalent to a natural language understanding system,  
9 said natural language understanding system determining a meaning from said text  
10 equivalent.

- 1 13. The machine readable storage of claim 12, further comprising:  
2 (d) determining one or more prosodic characteristics of said received dual  
3 tone multi-frequency signal.
- 1 14. The machine readable storage of claim 13, wherein said determined prosodic  
2 characteristics are used in said step (b) to determine said text equivalent.
- 1 15. The machine readable storage of claim 12 further comprising:  
2 (e) if said audio input signal is determined to be a human speech signal,  
3 providing said audio input signal to a speech recognition system for converting speech  
4 to text.
- 1 16. The machine readable storage of claim 15, further comprising:  
2 (f) collating text received from said speech recognition system with at least  
3 one said text equivalent.
- 1 17. The machine readable storage of claim 16, wherein said step (c) comprises  
2 providing said collated text comprising text received from said speech recognition  
3 system and at least one said text equivalent to a natural language understanding  
4 system.

1 18. The machine readable storage of claim 12, wherein said natural language  
2 understanding system provides contextual feedback to said step (b) for converting said  
3 input signal identified as a dual tone multi-frequency signal to said text equivalent.

1 19. A machine readable storage, having stored thereon a computer program having  
2 a plurality of code sections executable by a machine for causing the machine to  
3 perform the steps of:

- 4 (a) receiving a dual tone multi-frequency signal;  
5 (b) converting said dual tone-multi frequency signal to a text equivalent; and  
6 (c) providing said text equivalent to a natural language understanding system,  
7 said natural language understanding system determining a meaning from said text  
8 equivalent.

9 20. The machine readable storage of claim 19, further comprising:  
10 determining one or more prosodic characteristics of said received dual tone  
11 multi-frequency signal.  
12

1 21. The machine readable storage of claim 20, wherein said determined prosodic  
2 characteristics are used in said step (b) to convert said received dual tone multi-  
3 frequency signal to said text equivalent.

1 22. The machine readable storage of claim 19, wherein said step (c) provides  
2 contextual feedback to said step (b) for converting said received dual tone multi-  
3 frequency signal to said text equivalent.

1 23 A system for converting dual tone multi-frequency signals into text equivalents for  
2 use with a natural language understanding system, said system comprising:

3 an interactive voice response unit for receiving user spoken utterances and dual  
4 tone multi-frequency signals;

5 a dual tone multi-frequency converter for converting said dual tone multi-  
6 frequency signals into text equivalents;

7 a natural language understanding system for determining a meaning from text  
8 converted from said user spoken utterances and said text equivalents.

9 24. The system of claim 23, further comprising:

10 a speech recognition system for converting said user spoken utterances to said  
11 text.

1 25. The system of claim 24, further comprising:

2 a collator for collating said text converted from said user spoken utterances and  
3 said text equivalents.